Ct-AVL688
GPS/ GPRS vehicle tracking unit

USER MANUAL
Version 0.2

2012/3/13 Update

1 Product Description

GPS vehicle tracker Ct-AVL688 is characteristic with SMS function and GPRS function. It has built-in high sensitive SiRF Star III GPS module and Quad-Band GSM module. Through the GPRS transmission, it returns real-time vehicle location coordinates to the back-end server. It can also monitor and manage the vehicle location by sending SMS message to user-defined cell phone numbers.

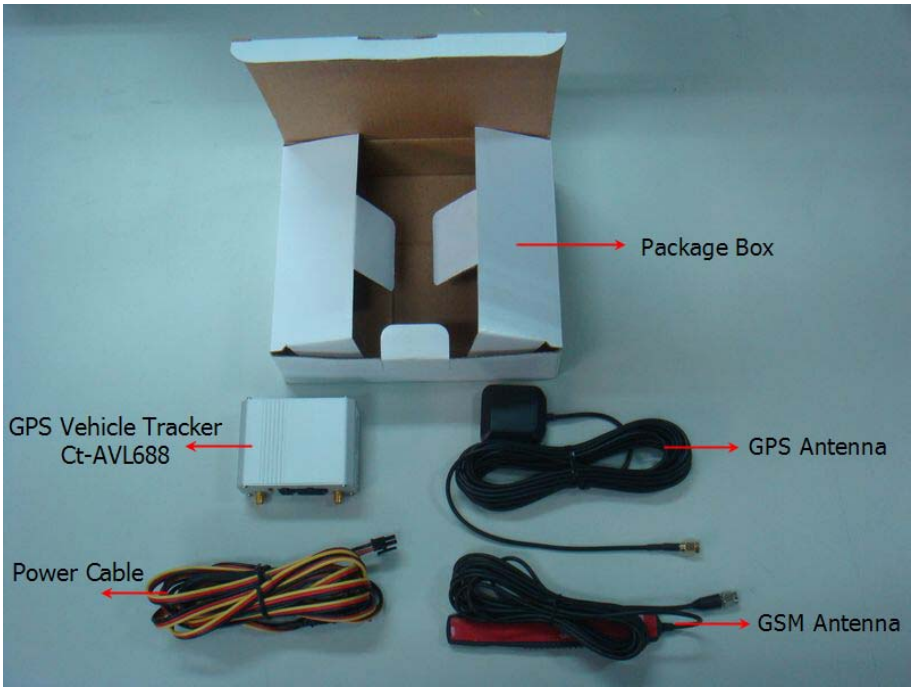
This product has the following characteristics:

1. SMS, GPRS TCP/UDP Communications
2. Monitoring through the cell phone
3. Geo-fence Reports (Circular/ Polygon Zones)
4. Over-speed alert
5. Movement/Towing alert
6. Power removing alert
7. GPS Antenna Disconnect / Cut alarm
8. Idle report
9. Voltage detection report
10. Support setting of Domain Name
11. Support A-GPS function (Cell Locate)
12. Save data more than 35,000 GPRS packets
13. Set the parameters from remote center (via SMS or GPRS)
14. Firmware upgrade Over The Air (via GPRS)

2 Hardware Description

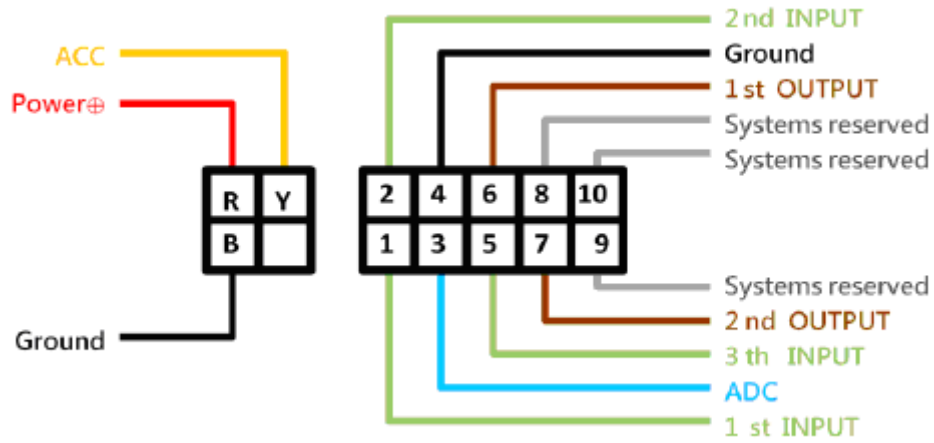
Ct-AVL688 front face

Ct-AVL688 rear face



Contents in box

3 Product Specifications

Item	Specification
Working Voltage	10VDC ~ 24VDC
Backup battery	1100mAh (optional)
Power consumption	peak <500mA @ 24VDC; standby <80 mA @ 24VDC
Outside dimension	70 mm/L x 52 mm/W x 25 mm/H
Weight	85g
Operating temperature	-10℃ ~ 55℃
Communication mode	GSM 850/900/1800/1900; GPRS TCP/UDP; SMS
GPS module chipset	SiRF Star III
GPS sensitivity	-159dBm
Definition of pins 	
Power⊕	Input voltage range 10VDC ~ 35VDC
Ground	Connect to negative terminal of car battery, or good grounding contacts of the car.
ACC	Input voltage range 6VDC ~ 35VDC
1st/2nd/3rd Input	1st INPUT and 2nd INPUT are high potential triggers, allows maximum 40VDC, 3rd INPUT is a low potential trigger.
1st/2nd Output	When output is low voltage (0V), maximum current of 100mA is allowed. The maximum voltage allowed on the output (open-collector) is 50VDC.
ADC	Analog input range 0VDC ∽ 36VDC (12-bit resolution)
Systems reserved	For setting or testing by original factory

4 Installation

4.1 Check the Accessories first

Before using the GPS vehicle tracker Ct-AVL688, please check all accessories are complete.

4.2 Install the SIM card

4.2.1 Prepare a SIM card which has GPRS service and text messaging capability, and remember to cancel the function of voice mailbox message and also cancel the password locking.

4.2.2 SIM card tray will pop up automatically when you use a sharp object pressing the yellow switch next to SIM card connector.

4.2.3 Place the SIM card with metal contacts toward up side then push the tray back into the SIM card.

4.3 Connect the Power Cable

4.3.1 Use multi-meter to find permanent power 12VDC or 24VDC in the car. Then connect the red line to the contact point, or directly connect the red line to the positive end of car battery with well-protected cable handling.

4.3.2 Use multi-meter to find the contact point which is greater than 5VDC when ACC is ON, and 0VDC when ACC is OFF. Connect the yellow line to this contact point with well-protected cable handling.

4.3.3 Connect black line of the power cable to ground of the car, or directly connect to the negative terminal of car battery.

4.4 Connect the Antenna

4.4.1 Tighten the GPS / GSM antenna correctly into the SMA connector of GPS vehicle tracker Ct-AVL688.

4.4.2 Avoid GSM antenna being close to the metal surface or being next to the speaker or car wireless radio transmitter.

4.4.3 Install the GPS antenna toward the open sky, please choose the top of car or an exposed position as possible for the best RF signal receiving. If it is necessary to hide the antennas for the internal installation, please let the GPS antenna not covered with any metal object.

4.4.4 Avoid affecting the signal reception of antennas, extra parts of antenna cable should be fixed and the whole cable handling should be without any bending or extrusion.

5 Functions of Instructions

5.1 GPRS Connection

After setting the correct APN and IP/PORT parameter values in the device, power on the Ct-AVL688, it will automatically connect to the first set of IP/PORT which is set in the Ct-AVL688. When it can't connect to the first set of IP/PORT , it will kick in the second set of IP/PORT automatically. For weak or unavailable GPRS covering area, Ct-AVL688 will save the GPRS data packet in the built-in flash. When the GPRS network is recovered, all data packet will send back to the center immediately and automatically.

5.2 Mobile Phone Monitoring

When you want to know the location of your car, you can directly dial the phone number to GPS vehicle tracker. After identifying the phone number, Ct-AVL688 will cut off calls automatically. Then it will reply the address of location by text or hyperlink which can be showed on Google maps. Ct-AVL688 makes it easy to control your car everywhere.

5.3 SMS Message Command

GPS vehicle tracker Ct-AVL688 has 12 kinds of setting and controlling SMS commands, you do not need to use the computer to control it. Please refer to the relevant functions and descriptions as follows.

5.3.1 Set IP/PORT

Format		*CID,PWD,61,IP,PORT,INDEX,TYPE*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	61	Command name
	IP	IP address or domain name of remote server
	PORT	Port of remote server
	INDEX	1: Set 1st set IP / PORT 2: Set 2nd set IP / PORT
	TYPE	0: Set this set of IP / PORT as the TCP 1: Set this set of IP / PORT as the UDP
For example		*1234,00000000,61,127.0.0.1,5000,1,0*

5.3.2 Set APN

Format		*CID,PWD,62,APN,USR,PSS*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	62	Command name
	APN	Provided from Telecommunications service operators , Access Point Name (APN)
	USR	APN-Login account (Keep blank if there is no login account)
	PSS	APN -Login password (Keep blank if there is no login password)
For example		*1234,00000000,62,Internet,,*

5.3.3 Set User Password

Format		*CID,PWD,63,NPWD*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	63	Command name
	NPWD	Set the new user password (8 alphabets-uppercase , lowercase or numbers)
For example		*1234,00000000,63,88888888*

5.3.4 Set Phone Number

Format		*CID,PWD,64,INDEX,TYPE*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	64	Command name
	INDEX	0: Set the unique phone number of receiving regular returned SMS message and warning messages 1: Set the 1st accepted phone number 2: Set the 2nd accepted phone number 3: Set the 3rd accepted phone number 4: Set the 4th accepted phone number 5: Set the 5th accepted phone number 6: Set the 6th accepted phone number 7: Set the 7th accepted phone number
	TYPE	0: Mobile phone with no Internet access 1: Mobile phone with Internet available
For example		*1234,00000000,64,0,1*

Remark:

Telephone number will be automatically obtained from SMS by the Ct-AVL688

5.3.5 Set the Output Port

Format		*CID,PWD,65,INDEX,LEVEL,COUNT,TIME1,TIME2*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	65	Command name
	INDEX	1: Setting 1st output port 2: Setting 2nd output port
	LEVEL	0: Set the output be low voltage (0V) 1: Set the output be open-collector
	COUNT	0: Disable the output port 1 ~ 14: The number of voltage level converting times, when the output port is enabled 15: Continuously voltage converting when the output port is enabled
	TIME1	The time to hold when output port is enabled and converted to the opposite voltage level in each enabling cycle. 1 ~ 254: 100 ~ 25400ms 255: Hold forever when the output is converted
	TIME2	The time to hold when output port is enabled and back to the original voltage level in each enabling cycle. 0 ~ 255: 0 ~ 25500ms
For example		*1234,00000000,65,2,1,5,255,145*

5.3.6 Reset Output Port

Format		*CID,PWD,66,INDEX *
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	66	Command name
	INDEX	1: Reset 1st output port 2: Reset 2nd output port
For example		*1234,00000000,66,1*

5.3.7 Return SMS Message Regularly

Format		*CID,PWD,67,COUNT,INTERVAL*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	67	Command name
	COUNT	The number of total retuned SMS, Setting Range: 0 ~ 65535
	INTERVAL	The time interval of each SMS, setting range: 5 ~ 65535 (seconds)
For example		*1234,00000000,67,3,60*

5.3.8 Enable Output Port

Format		*CID,PWD,68,INDEX*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	68	Command name
	INDEX	1: Enable 1st output port 2: Enable 2nd output port
For example		*1234,00000000,68,2*

5.3.9 Set Warning Messages

Format		*CID,PWD,69,INDX,MESSAGE*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	69	Command name
	INDEX	Warning message when 1: 1st input port is triggered 2: 2nd input port is triggered 3: 1st Geo-fencing is triggered 4: 2nd Geo-fencing is triggered 5: 3rd Geo-fencing is triggered 6: 4th Geo-fencing is triggered 7: ACC ON abnormally 8: Main power of GPS tracker is removed 9: GPS antenna is not connected or removed 10:Abnormal voltage detected (ADC) 11:Speeding 12: Car is moving or towing abnormally
	MESSAGE	Pre-set warning message which is composed of uppercase and lowercase letters and numbers , does not exceed maximum 70 characters.
For example		*1234,00000000,69,2,The door was opened*

5.3.10 On / Off GPRS Connectivity

Format		*CID,PWD,70,TYPE *
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	70	Command name
	TYPE	0: Turn off GPRS connectivity 1: Turn on GPRS connectivity
For example		*1234,00000000,70,1*

5.3.11 Reply of Cell Locate

Format		*CID,PWD,71*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	71	Command name
For example		*1234,00000000,71*

5.3.12 Set the Geo-fence

Format		*CID,PWD,72,LAT,LNG,DISTANCE,TYPE*
Descriptions	CID	GPS vehicle tracker ID
	PWD	User Password
	72	Command name
	LAT	Latitude, Range -89.999999 ~ 89.999999
	LNG	Longitude, Range -179.999999 ~ 180.000000
	DISTANCE	Distance, Range 1 ~ 99999999 (meters)
	TYPE	0: Inside the area alarm 1: Outside the area alarm
For example		*1234,00000000,72,22.123456,-111.123456,5000,0*

6 Descriptions of LED indicators

GSM indicator (Red LED)	
Red LED continuously on	During GPRS registration and connection process
Red LED flashes per 2 sec.	Success of on-line working with GPRS function
Red LED on 1 sec. off 1 sec.	SIM Card reading error
Red LED continuously flashes	GSM module error
GPS indicator (Yellow LED)	
Yellow LED continuously on	Searching satellites for fixing position
Yellow LED flashes per 2 sec.	Success of GPS positioning
Yellow LED on 1 sec. off 1 sec.	GPS antenna error or GPS antenna is not connected
Yellow LED continuously flashes	GPS module error

Remarks:

At the power on moment, Red & Yellow LED will simultaneously flash one time, it stands for that machine self-test is correctly finished.